CASE C23010/A/PCT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE PCT NATIONAL STAGE APPLICATION OF
Benjamin Breitenstein, et al.
INTERNATIONAL APPLICATION NO. **PCT/EP 2005/050140**
FILED: **January 14, 2005**
FOR: Method of Producing Low-Dust Granules
From Polymer Additives
U.S. APPLICATION NO: **10/586,707**
35 USC 371 DATE: July 10, 2008

Group Art Unit: **1766**
Examiner: **Shane Fang**
Confirmation No. 8777

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

Sir:

This Appeal is from the Final Rejection of claims 1-5 and 8-10 mailed from the USPTO on March 11, 2011.

A Notice of Appeal was timely filed on July 6, 2011. This Brief is timely filed within 2 months of the filing of the Notice of Appeal

The Commissioner is hereby authorized to charge any necessary fee or credit any overpayment to Deposit Account No. 503852.

(1) REAL PARTY OF INTEREST

The real party of interest, by virtue of an asset transfer agreement between Ciba Corporation and BASF SE of July 1, 2009 is:

BASF SE
Carl-Bosch-Strasse 38
6700 Ludwigshafen
Rheinland-Pfalz D-67056, Germany

The application was originally assigned to Ciba Specialty Chemicals Corp. in an assignment recorded in the U.S. Patent and Trademark Office, May 12, 2009, reel/frame 022676/0629.

Ciba Specialty Chemicals Corp. changed its name to Ciba Corp. November 1, 2007 in the state of Delaware.

(2) RELATED APPEALS AND INTERFERENCES

To the knowledge of the undersigned, there are no related appeals or interferences.

(3) STATUS OF THE CLAIMS

Claims 6-8 are canceled.

Claims 1-5 and 9-10 are pending.

Claims 1-5 and 9-10 are rejected and are being appealed.

Claims 1-5 and 9-10 are present in an attached appendix.

(4) STATUS OF THE AMENDMENTS

The claims now stand on Appeal as amended in the reply filed June 13, 2011. In said reply claim 8 was canceled. The Advisory Action dated June 29, 2011 indicated that for the purposes of appeal, the proposed amendment will be entered.

This brings up to date the status of the claims. A claims listing is present in the attached Claims Appendix.

(5) SUMMARY OF THE CLAIMED SUBJECT MATTER

Claim 1 is the only independent claim.

Claim 1 is directed to a method of producing low-dust granules of polymer additives or polymer additive mixtures. Polymer additives are listed on page 11, line 3 through page 19, line 11. The preferred polymer additives are phenolic polymer additives as described on page 3, line 14 through page 10, line 20.

In general, additives or additive mixtures are in powdered form, which can be disadvantageous, for example because of dust formation. There is a need for improved commercial product forms. Methods for preparing improved product forms include agglomeration methods, e.g. in an aqueous phase, optionally with the use of a dispersant, mixing methods with binders and compaction using a pellet press. Page 1, lines 10-15.

Methods for forming granulated polymer additives via melt extrusion are known, page 1, line 22 through page 2, line 2. There is a need for an improved method which enables granules to be formed in a subsequent step separately from extrusion, page 2, lines 8-10.

Claim 1 is aimed at a method of producing low-dust granules of polymer additives or polymer additive mixtures, wherein the polymer additives are mixed together, the mixture is converted into a workable mass and passed through an orifice, the pre-shaped strand-like extruded mass is cooled and, while still in a workable state, formed into granules by rolling, impressing, cooling and comminuting, page 2, lines 21-25.

The conversion of the mixture into a workable mass is performed for instance in a temperature controlled co-kneader or a co-rotating or counter-rotating extruder. By virtue of thermal and mechanical energy, the additives are mixed and processed into a workable mass, page 19, lines 25-28. The workable mass is passed through an orifice, page 19, line 30 through page 20, line 1.

The resultant strand-like extruded mass so pre-shaped is in a non-rigid state, e.g. a plastic or plastic-crystalline state, that is capable of further shaping. The extruded mass is cooled to a temperature at which it still remains workable, page 20, lines 1-5.

Claim 1 requires that the rolling is effected by passing the pre-shaped, still plastic material through two or three squeeze rollers. The spacing between the rollers is adjustable with the smallest spacing governing the size of the granules. The subsequent impressing is performed by processing the rolled out plastic with one, two or three linearly embossed shaping rollers which impart an impressed structure to the material. The material is thus impressed with a granular structure which provides predetermined breaking points for comminuting the hardened fragments of an impressed product mat. Page 20, lines 20-24 and lines 29-33.

Support for squeeze rollers having a "smooth and polished surface" is found in original claim 6.

The impressed product mat is allowed to harden on a cooling belt followed by comminuting to form granules along the impressed lines, page 21, lines 11-13.

Claim 2, dependent on claim 1, is aimed at where there are mixed together as granule-forming polymer additives phenolic polymer additives of formula (I). Support is found on page 3, line 14 through page 5, line 14.

Claim 3, dependent on claim 1, is focused on where there are mixed together as granule-forming polymer additives phenolic polymer additives of formula (I'), page 10, lines 9-20.

Claim 4, dependent on claim 1, is aimed at where the mixture of granule-forming polymer additives is converted into a workable mass in a heatable co-kneader, page 19, lines 25-29 and original claim 4.

Claim 5, dependent on claim 4, requires that the workable mass is extruded from the co-kneader through a circular or slot-shaped nozzle and the pre-shaped, strand-like mass is subjected to further processing. Support is found on page 19, lines 30-33 and original claim 5.

Claim 9, dependent on claim 4, is aimed at where the components of the granule-forming polymer additives are fed into the co-kneader in liquid or solid form or in molten form. Support is found on page 19, lines 22-24 and original claim 9.

Claim 10, dependent on claim 1, is aimed at where the impressed product mat is comminuted to granule size in a sieve granulator, page 21, lines 11-13 and original claim 10.

(6) GROUNDS OR REJECTION TO BE REVIEWED ON APPEAL

1) Claims 1, 4-5 and 8-9 are rejected under 35 USC 103(a) as being unpatentable over Tonnvik, et al., U.S. Pat. No. 6,569,933 in view of Hovis, et al., U.S. Pat. No. 4,842,794 and further in view of Legge, et al., U.S. Pat. No. 4,457,775.

2) Claims 2-3 and 10 are rejected under 35 USC 103(a) as being unpatentable over Tonnvik in view of Hovis and Legge and further in view of Neri, et al., U.S. Pat. No. 5,844,042.

(7) ARGUMENTS

Appellants respectfully respond as follows.

1) Claims 1, 4-5 and 8-9 are rejected under 35 USC 103(a) as being unpatentable over Tonnvik, et al., U.S. Pat. No. 6,569,933 in view of Hovis, et al., U.S. Pat. No. 4,842,794 and further in view of Legge, et al., U.S. Pat. No. 4,457,775.

The present process of preparing polymer additive granules requires that:

a) the additives are mixed together and converted to a workable mass and pressed through an orifice. The conversion to a workable mass takes place for instance in a heatable co-kneader (claim 4). The pre-shaped strand-like extruded mass is cooled and, while still in a workable state, formed into granules by rolling, impressing, cooling and comminuting;

b) the rolling is effected by passing the pre-shaped, still plastic material through two to three squeeze rollers with smooth and polished surfaces and the subsequent impressing is effected by processing the rolled out plastic material with one, two or three linearly embossed shaping rollers;

c) the material is impressed with a granular structure which provides predetermined breaking points in an impressed product mat and

d) the impressed product mat is allowed to harden on a cooling belt followed by comminuting to form granules along the impressed lines.

Tonnvik is cited as disclosing a method for producing low dust granulates of polymer additives where the additives are added to an extruder, heated, extruded through holes to form strands which are transported by two rolls and then granulated with rotating blades (Example 2 therein).

Tonnvik is silent on using squeeze rollers having smooth and polished surfaces followed by shaping rolls having embossing lines.

Hovis is cited as disclosing a process of preparing porous films with net-like patterns comprising polymers that may contain additives by passing extrudate of polymer through rolls having engraved lines.

Legge is cited as disclosing forming granules on a continuous steel belt with water cooled on its underside.

The Examiner maintains that it would have been obvious to one of ordinary skill in the art to have modified the process of Tonnvick by providing a first roller with a smooth surface, adding a second roller with an engraved surface in view of Hovis and adding a continuous steel belt for cooling and solidification.

Firstly, the present rolling is accomplished with two or three squeeze rollers with smooth and polished surfaces. Tonnvick does not at all disclose "squeeze" rollers, but rather discloses "The granulator consisted of two rolls for transport of the strands to a rotating blade.", col. 4, lines 51-55. Tonnvick does not at all disclose "squeeze" rollers but rather transport rollers for strands. The present process produces a "rolled out plastic". Tonnvick does not disclose a rolled out plastic. Thus, Appellants submit that each of the elements of the present claims are not disclosed in the cited art. The disclosures of the cited references to not meet the limitations of the present claims.

On page 3, lines 7-9, of the Office Action dated March 11, 2011, it is stated that although Tonnvik is silent on impressing, the rolling would inherently result in impressing "because of the pressure between rolls and the materials in between". Appellants point out that Tonnvik discloses two rolls for transport, but does not at all disclose "pressure between rolls and material in between".

Secondly, Appellants further submit that the Examiner has applied improper hindsight analysis to arrive at the present invention from the combined references. Tonnvik and Hovis are non-analogous art. Legge discloses a method of making granulated magnesium; although not directed at polymer additives, Legge is aimed at a method of making granules.

Hovis is not at all related to the present invention. Hovis is aimed at a method for making apertured films by properly embossing a thermoplastic film. The thermoplastic may be for instance polyethylene or polypropylene, col. 1, lines 58-68. Hovis teaches a process of embossing an extruded film on one side with a pattern of parallel grooves and on the other side with a pattern of parallel grooves which form an acute angle with the grooves on the first side, which forms slits or incipent slits in the film where the grooves cross each other, col. 1, lines 6-13. This shown in Fig. 1. The film may be made to appear fabric-like, col. 1, lines 16-19. A microphotograph of an apertured film is shown in Fig. 4.

It is clear that Hovis is not at all related to the present invention of making additive granules; rather the disclosure is aimed at a method for making perforated thermoplastic films. Appellants submit that the combination of the disclosures of Tonnvik and Hovis is based on hindsight analysis, which combination can only be arrived at with the knowledge of the present invention.

Further, there is no motivation supplied from the disclosures of Tonnvik of Hovis to combine the teachings therein. This is especially true as Hovis does not at all disclose "comminuting" or granule formation.

Further still, the success of the present invention could not have been expected from the combined disclosures of the cited references. The success of the present invention is demonstrated in working Examples 1-3 on pages 21-24. The present granules exhibit uniform shape and have advantageous bulk material properties.

2) Claims 2-3 and 10 are rejected under 35 USC 103(a) as being unpatentable over Tonnvik in view of Hovis and Legge and further in view of Neri, et al., U.S. Pat. No. 5,844,042.

Neri is cited as disclosing a process of producing specific granular phenolic polymer additives and for disclosing a sieve granulator.

Appellants respond as for rejection 1). Claims 2-3 and 10 are argued as for claims 1, 4-5 and 9. Claims 2-3 and 10 depend from and contain all the limitations of claim 1.

To summarize, Appellants submit that 1) the limitations of the present claims are not met by the combined disclosure of the cited references, 2) that the combination of Tonnvik and Hovis is based on improper hindsight analysis, 3) that there is no motiviation supplied in Tonnvik or Hovis to combine the teachings therein and 4) that the success of the present invention could not have been expected based on the combined disclosures of the cited references.

For these reasons, Appellants submit that each of the 35 USC 103(a) rejections are addressed and are successfully rebutted.

Appellants respectfully request that the rejections be reconsidered and reversed.

Respectfully submitted,

/tyler a stevenson/

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Attachments: Claims Appendix
Evidence Appendix
Related Proceedings Appendix

(8) CLAIMS APPENDIX

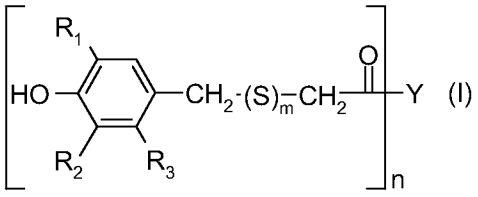
1. (previously presented) A method of producing low-dust granules of polymer additives or polymer additive mixtures, wherein granule-forming polymer additives are mixed together, the mixture is converted into a workable mass and pressed through an orifice, and the pre-shaped strand-like extruded mass is cooled and, while still in a workable state, formed into granules by rolling, impressing, cooling and comminuting,

where the rolling is effected by passing the pre-shaped, still plastic material through two or three squeeze rollers with smooth and polished surfaces and the subsequent impressing is effected by processing the rolled out plastic material with one, two or three linearly embossed shaping rollers,

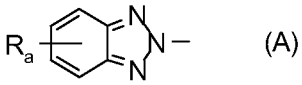
where the material is impressed with a granular structure which provides predetermined breaking points in an impressed product mat and

where the impressed product mat is allowed to harden on a cooling belt followed by comminuting to form granules along the impressed lines.

2. (previously presented) A method according to claim **1**, wherein there are mixed together as granule-forming polymer additives phenolic polymer additives of formula (I)



wherein, independently of one another, one of R_1 and R_2 is hydrogen, a substituent selected from the group C_1-C_{18}alkyl, phenyl, (C_1-C_4alkyl)$_{1-3}$phenyl, phenyl-C_1-C_3alkyl, (C_1-C_4alkyl)$_{1-3}$phenyl-C_1-C_3alkyl, C_5-C_{12}cycloalkyl and (C_1-C_4alkyl)$_{1-3}$$C_5$-$C_{12}$cycloalkyl or a group of partial formula (A)



wherein R_a is hydrogen or a substituent selected from the group C_1-C_4alkyl, halogen and sulfo;

and the other is a substituent selected from the group C_1-C_{18}alkyl, phenyl, (C_1-C_4alkyl)$_{1-3}$phenyl, phenyl-C_1-C_3alkyl, (C_1-C_4alkyl)$_{1-3}$phenyl-C_1-C_3alkyl, C_5-C_{12}cycloalkyl and (C_1-C_4alkyl)$_{1-3}$$C_5$-$C_{12}$cycloalkyl or a group of partial formula (A) wherein R_a is as defined;

R_3 is hydrogen or methyl;

m is the number zero or 1; and

n is an integer from 1 to 4; wherein,

when n is the number 1,

m is zero or 1 and Y denotes

a monovalent substituent –O-Y_1 or –N(-Y_2)$_2$, wherein

Y_1 is C_5-C_{45}alkyl, C_3-C_{45}alkyl interrupted by at least one oxygen atom, C_5-C_{12}cycloalkyl, C_2-C_{12}alkenyl, a substituent of partial formula (B)

$$-CH_2-CH(OH)-CH_2-O-C(=O)-R_b \qquad (B)$$

wherein R_b is hydrogen, C_1-C_8alkyl, C_3-C_5alkenyl or benzyl,

a substituent of partial formula (C)

$$-CH_2-CH_2-O-R_c \qquad (C)$$

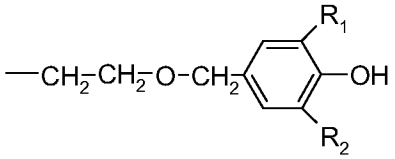
wherein R_c is hydrogen, C_1-C_{24}alkyl, C_5-C_{12}cycloalkyl or phenyl,

a substituent of partial formula (D)

$$-CH_2-CH_2-O-CHR_d-CHR_e-C(=O)-O-R_f \qquad (D)$$

wherein one of R_d and R_e is hydrogen or methyl and the other is methyl, and R_f is hydrogen or C_1-C_{24}alkyl,

a substituent of partial formula (E)



(E)

wherein R_1 and R_2 are as defined above,

or a substituent of partial formula (F)

$$-CH_2-CH_2-O-CH_2-C(=O)-O-R_g \qquad (F)$$

wherein R_g is hydrogen or C_1-C_{24}alkyl; and
Y_2 is hydroxy-C_2-C_4alkyl; or,

when n is the number 2,
m is zero and Y is a bivalent group of partial formula (G)

$$-O-C_xH_{2x}-O- \quad (G)$$

wherein x is an integer from 2 to 20,
a bivalent group of partial formula (H)

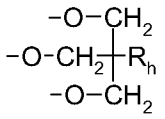
$$-O-(CH_2-CH_2-O)_y-CH_2-CH_2-O- \qquad (H)$$

wherein y is an integer from 1 to 30,
or a bivalent group of partial formula (I), (K) or (L)

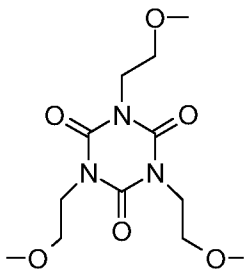
$$-O-CH_2-CH_2-S-CH_2-CH_2-O- \qquad (I)$$
$$-O-CH_2-CH=CH-CH_2-O- \qquad (K)$$
$$-NH-(CH_2)_z-NH- \qquad (L)$$

wherein z is zero or an integer from two to ten; or,

when n is the number 3, m is zero and Y is a trivalent group of partial formula (M)


(M)

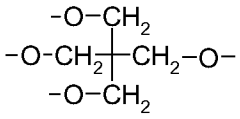
wherein R_h is C_1-C_{24}alkyl or phenyl, or (N)



(N)

or,

when n is the number 4, m is zero and Y is the tetravalent group of partial formula



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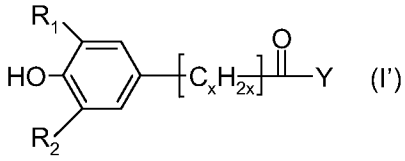
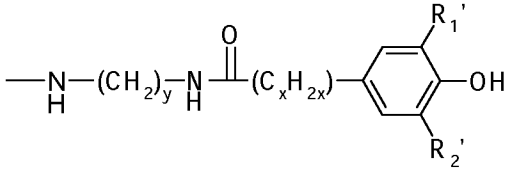
3. (previously presented) A method according to claim **1**, wherein there are mixed together as granule-forming polymer additives phenolic polymer additives of formula (I')

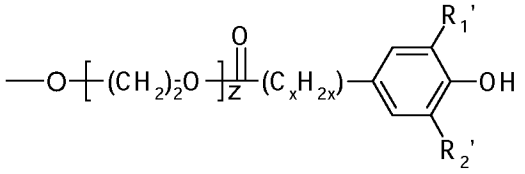


(I')

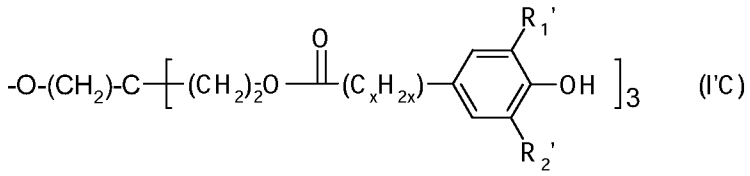
wherein, independently of one another, one of R_1 and R_2 is hydrogen or C_1-C_4alkyl and the other is C_3-C_4alkyl; x is zero (direct bond) or an integer from one to three; and Y is C_8-C_{22}alkoxy or a group of partial formula (I'A), (I'B) or (I'C)



(I'A)



(I'B)



(I'C)

wherein, independently of one another, one of R_1' and R_2' is hydrogen or C_1-C_4alkyl and the other is C_3-C_4alkyl; x is zero (direct bond) or an integer from one to three; y is an integer from two to ten and z is an integer from two to six.

4. (previously presented) A method according to claim **1**, wherein the mixture of granule-forming polymer additives is converted into a workable mass in a heatable co-kneader.

5. (previously presented) A method according to claim **4**, wherein the workable mass is extruded from the co-kneader through a circular nozzle or slot-shaped nozzle and the pre-shaped, strand-like mass is subjected to further processing.

6-8. (canceled)

9. (previously presented) A method according to claim **4**, wherein the components of the granule-forming polymer additives are fed into the co-kneader in liquid or solid form or in molten form.

10. (original) A method according to claim **1**, wherein the impressed product mat is comminuted to granule size in a sieve granulator.

(9) EVIDENCE APPENDIX

No evidence is submitted.

(10) RELATED PROCEEDINGS APPENDIX

As Appellants are not aware of any other related proceedings, no copies of decisions rendered by a court or the Board are attached.